

LISTING OF THE CLAIMS

1. (Currently amended) A device for acoustically ejecting a droplet of fluid from each of a plurality of fluid reservoirs, comprising:

a plurality of reservoirs each adapted to contain a fluid;

an acoustic ejector; and

means for successively providing an sequentially positioning each of the reservoirs relative to the acoustic ejector at a predetermined distance therefrom, and, when an acoustic coupling medium is present between each reservoir and the acoustic ejector, in acoustic coupling relationship between the acoustic ejector and each reservoir, wherein in each successive acoustic coupling relationship, the acoustic ejector and a reservoir are positioned at a predetermined distance from each other with an acoustic coupling medium interposed therebetween.

2. (Currently amended) The device of claim 1, wherein the acoustic ejector is comprised of an acoustic radiation generator for generating acoustic radiation.

3. (Currently amended) The device of claim ~~1~~ 2, wherein the acoustic ejector is ~~comprised of~~ further comprises a focusing means for focusing ~~the acoustic radiation generated.~~

4. (Original) The device of claim 3, wherein the focusing means is comprised of a solid member having a curved surface.

5. (Currently amended) The device of claim 3, wherein ~~each reservoir is adapted to contain a fluid having a free surface and~~ the focusing means is adapted to focus acoustic radiation generated by the acoustic radiation generator to causes acoustic waves from the acoustic ejector to converge at a focal point sufficiently near the free surface of a fluid in one of the plurality of reservoirs so as to eject a fluid droplet therefrom.

6. (Original) The device of claim 1, wherein the acoustic ejector comprises an acoustic transducer.

7. (Currently amended) The device of claim 6, further comprising a ~~controller~~ means for controlling the acoustic ejector.

8. (Original) The device of claim 1, further comprising a detector for detecting a fluid level or volume in the reservoirs.

9. (Original) The device of claim 1, wherein the reservoirs and the ejector are movable with respect to each other.

10. (Currently amended) The device of claim 1, further comprising a substrate for receiving droplets ejected from the reservoirs, wherein the substrate is movable relative to the acoustic ejector.

11. (Original) The device of claim 8, wherein the acoustic ejector comprises an acoustic transducer and a focusing means in operative association with the acoustic transducer for focusing acoustic radiation emitted by the acoustic transducer, the device further comprising:
an acoustic coupling medium interposed between the focusing means and the reservoirs;
and

a controller in operable communication with the ejector, wherein the controller is adapted to adjust the acoustic radiation emitted by the acoustic transducer.

12. (Original) The device of claim 8, wherein the acoustic ejector comprises an acoustic transducer and a focusing means in operative association with the acoustic transducer for focusing acoustic radiation emitted by the acoustic transducer, the device further comprising:
an acoustic coupling medium interposed between the focusing means and the reservoirs;
and

a controller in operable communication with the ejector, wherein the controller is adapted to adjust the intensity of acoustic radiation emitted by the acoustic transducer.

13. (Original) The device of claim 8, wherein the acoustic ejector comprises an acoustic transducer and a focusing means in operative association with the acoustic transducer for focusing acoustic radiation emitted by the acoustic transducer, the device further comprising:

an acoustic coupling medium interposed between the focusing means and the reservoirs;
and

a controller in operable communication with the ejector, wherein the controller is adapted to adjust the duration of acoustic radiation emitted by the acoustic transducer.

14. (Currently amended) The device of claim 8, wherein the acoustic ejector comprises an acoustic transducer and a focusing means in operative association with the acoustic transducer for focusing acoustic radiation emitted by the acoustic transducer, the device further comprising:

an acoustic coupling medium interposed between the focusing means and the reservoirs;
and

a controller in operable communication with the ejector, wherein the controller is adapted to adjust the ~~relative position of the reservoirs with~~ relative to the ejector in response to a change in fluid level or volume detected by the detector.

15. (Original) The device of claim 1, wherein one of the reservoirs is a first well containing a first fluid.

16. (Original) The device of claim 15, wherein the reservoirs and the ejector are movable with respect to each other.

17. (Currently amended) The device of claim 16, ~~wherein the first fluid has a free surface and the device further comprises~~ comprising a means for maintaining the acoustic ejector and the ~~free surface of the first fluid at the same~~ a constant distance as the volume of first fluid in the first well decreases.

18. (Currently amended) The device of claim 16, wherein the means for maintaining the constant distance comprises a means for repositioning the acoustic ejector~~is adapted to move~~ to compensate for any ~~changes~~ change in the level of the first fluid in the first well.

19. (Currently amended) The device of claim 16, wherein the means for ~~positioning~~ maintaining the constant distance comprises a means for repositioning the reservoirs~~is adapted to move~~ to compensate for any ~~changes~~ change in the level of the first fluid in the first well.

20. (Currently amended) The device of claim 16, wherein the acoustic ejector comprises an acoustic transducer and a focusing means that focuses acoustic radiation generated by the transducer toward ~~a free~~ the surface of the first fluid.

21. (Original) The device of claim 1, further comprising a means for interposing the acoustic coupling medium between the acoustic ejector and the reservoirs for transmitting acoustic radiation therebetween.

22. (Currently amended) The device of claim 15, wherein another one of the reservoirs is a second well adjacent to the first well and the means for ~~positioning the reservoirs~~ is adapted to move so that the second well in position to allow successively providing acoustic coupling allows the acoustic ejector to be moved into acoustic coupling relationship with respect to the second well and eject a droplet of a second fluid from the second well.

23. (Original) The device of claim 22, wherein the first and second wells form a portion of a well plate.

24. (Currently amended) The device of claim 1, wherein ~~one each~~ of the reservoirs is a first well for holding a first fluid and the first well is removable from the means for positioning the reservoirs device.

25. (Original) The device of claim 24, wherein the first well forms a portion of a well plate.

26. (Currently amended). The device of claim 1, wherein the acoustic ejector has a curved surface for contacting the acoustic coupling medium and ~~to focus~~ focusing acoustic radiation ~~from generated by the acoustic ejector toward a~~ the surface of a fluid ~~reservoir~~ containing a contained in one of the reservoirs.

27. (Currently amended). The device of claim 1, further comprising a controller for controlling the means for ~~position~~ positioning the reservoirs.

28. (Original) The device of claim 1, further comprising a biomolecule in a reservoir.

29. (Currently amended) The device of claim 28, wherein the biomolecule is ~~nucleotide,~~ nucleotidic, peptidic, polynucleotic, polypeptidic, cellular, or a combination thereof.

30. (Original) The device of claim 1, further comprising a chemical compound in a reservoir.

31. (Original) The device of claim 30, wherein the compound is a solvent.

32. (Original) The device of claim 1, wherein the acoustic ejector is adapted to eject a droplet up to about 1 picoliter in volume.

33. (Currently amended) The device of claim 28, wherein the biomolecule is ~~mononucleotidic or oligonucleotic~~ a nucleotide or an oligonucleotide.

34. (Currently amended) The device of claim 28, further comprising a substrate for receiving one or more fluid droplets ejected from the reservoirs.

35. (Currently amended) The device of claim 34, wherein the surface of the substrate contains toward which fluid droplets are ejected from the reservoirs bears one or more moieties.

36. (Original) The device of claim 44, wherein the one or more moieties are biochemical or chemical compounds.

37. (Original) The device of claim 36, wherein the one or more moieties comprise a polypeptide.

38. (Currently amended) A device for acoustically ejecting a droplet of fluid from a reservoir onto a substrate, the device comprising an acoustic ejector and a means for positioning the reservoir, wherein:

the means for positioning the reservoir is adapted to position the reservoir relative to the acoustic ejector so that the ejector is acoustically ~~whereby the acoustic ejector is~~ coupled to a first surface of the reservoir ~~by~~ through an acoustic coupling medium interposed between the acoustic ejector and the first surface of the reservoir, such that

an acoustic wave generated by the acoustic ejector is transmitted through the acoustic coupling medium to the first surface of the reservoir and thereafter propagates through the reservoir into the fluid on a second surface of the reservoir opposite the first surface of the reservoir, causing controlled ejection of a droplet of the fluid from the reservoir.

39. (New) A method for depositing a plurality of fluid droplets on the surface of a substrate, the method comprising:

(a) acoustically coupling a first reservoir containing a first fluid to an acoustic radiation generator;

(b) activating the acoustic radiation generator to produce and direct acoustic radiation into the first fluid and to focus the acoustic radiation at a focal point sufficiently near the surface of the first fluid so as to eject a droplet thereof toward a first site on the substrate surface;

(c) acoustically coupling a second reservoir containing a second fluid to the acoustic radiation generator;

(d) activating the acoustic radiation generator as in step (b) to eject a droplet of the second fluid from the second reservoir toward a second site on the substrate surface; and

(e) repeating steps (c) and (d) with additional reservoirs each containing a fluid until a droplet has been ejected from each reservoir,

wherein the acoustic radiation generator is repositioned relative to the fluid surface between steps (c) and (d) when necessary to ensure that the acoustic radiation reaches a focal point sufficiently near the surface of the second and/or additional fluids so as to eject a droplet thereof toward the substrate surface.

40. (New) The method of claim 39, wherein at least two ejected droplets are deposited at the same site on the substrate surface.

41. (New) The method of claim 39, further comprising, prior to step (a), modifying the substrate surface.

42. (New) The method of claim 41, wherein said modifying comprises deposition of a fluid on the substrate surface.

43. (New) The method of claim 39, wherein repositioning the acoustic radiation generator involves vertical, horizontal and/or rotational movement.